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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/687,589	10/20/2003	Byung-cheol Song	Q77338	2529

23373 7590 08/02/2007

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EXAMINER	
RAO, ANAND SHASHIKANT	

ART UNIT	PAPER NUMBER
2621	

MAIL DATE	DELIVERY MODE
08/02/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/687,589	SONG ET AL.	
	Examiner	Art Unit	
	Andy S. Rao	2621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *the Appeal Brief filed on 4/20/07*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2 and 4-7* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2 and 4-7* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments, see Appellant's Brief, filed on 4/20/07, with respect to the rejection(s) of claim(s) 1-2, and 4-7 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Ribas-Corbera and Lin et al., (hereinafter referred to as "Lin")

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

3. Claims 1-2, 4-5 are rejected under 35 U.S.C. 102(e) as being anticipated by Ribas-Corbera.

Ribas-Corbera disclose a method for encoding a video signal with a variable bit rate (Ribas-Corbera: figure 6), the method comprising: (a) calculating a complexity for each of a plurality of pictures (Ribas-Corbera: column 4, lines 40-55) on the basis of a bit amount and a quantization parameter of a previous frame (Ribas-Corbera: column 4, lines 57-67); (b) calculating a remaining bit amount for each picture (Ribas-Corbera: column 8, lines 5-35) in proportion to the complexity for each picture calculated in (a) (Ribas-Corbera: column 5, lines 20-40); (c) calculating a quantization parameter of a current frame on the basis of the complexity for each picture and the remaining bit amount for each picture calculated in (b) (Ribas-Corbera: column 6, lines 20-67); and (d) comparing the quantization parameter of the current frame calculated in (c) with a predetermined minimum quantization parameter and determining a final quantization parameter (Ribas-Corbera: column 7, lines 25-40), as in claim 1.

Regarding claim 2, Ribas-Corbera discloses wherein the remaining bit amount for each picture is obtained by multiplying the complexity for each picture by a total bit amount of remaining frames for each picture (Ribas-Corbera: column 6, liens 50-60), as in the claim.

Regarding claim 4, Ribas-Corbera discloses the quantization parameter of the current frame is obtained by dividing an average complexity for each picture by the remaining bit amount for each picture (Ribas-Corbera: column 6, lines 20-20-30), as in the claim.

4. Regarding claim 5, Ribas-Corbera discloses wherein in determining the final quantization parameter, the predetermined minimum quantization parameter is determined to be the final quantization parameter if the quantization parameter of the current frame is smaller than the

predetermined minimum quantization parameter, and the quantization parameter of the current frame is determined to be the final quantization parameter if the quantization parameter of the current frame is greater than the predetermined minimum quantization parameter (Ribas-Corbera: column 7, lines 5-65), as in the claim.\

5. Claim 6 is rejected under 35 U.S.C. 102(e) as being anticipated by Lin et al., (hereinafter referred to as "Lin").

Lin disclose an apparatus for encoding a video signal (Lin: figure 1), the apparatus comprising: a discrete cosine transform (DCT) unit which performs DCT on input image data (Lin: figure 1, element 10) in units of macroblocks (Lin: column 1, lines 35-40); a bit rate controller which determines a quantization parameter of a current frame (Lin: column 4, lines 1-25), on the basis of a bit amount for each picture (Lin: column 3, lines 55-67) and a complexity for each picture generated per frame (Lin: column 1, lines 43-47); a quantization unit which quantizes the image data subjected to DCT by the DCT unit according to the quantization parameter determined by the bit rate controller (Lin: figure 1, element 11); a dequantization unit which dequantize the image data quantized by the quantization means (Lin: figure 1, element 12); an Inverse Discrete Cosine Transform (IDCT) unit which performs IDCT on the image data dequantized by the dequantization unit (Lin: figure 1, element 13); a frame memory which stores the image data subjected to IDCT by the IDCT unit, in units of frames (Lin: figure 1, element 14); and a movement estimation (Lin: figure 1, element 16) and compensation unit (Lin: figure 1, element 17) which estimates a movement vector and a Sum of Absolute Difference (SAD) using image data of an input current flame and image data of an immediately preceding flame stored in

the flame memory (Lin: column 2, lines 30-40), and compensates for movement using the movement vector (Lin: column 1, lines 20-30), as in claim 6.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lin et al., (hereinafter referred to as "Lin") in view of Ribas-Corbera.

Lin disclose an apparatus for encoding a video signal (Lin: figure 1), the apparatus comprising: a discrete cosine transform (DCT) unit which performs DCT on input image data (Lin: figure 1, element 10) in units of macroblocks (Lin: column 1, lines 35-40); a bit rate controller which determines a quantization parameter of a current frame (Lin: column 4, lines 1-25), on the basis of a bit amount for each picture (Lin: column 3, lines 55-67) and a complexity for each picture generated per frame (Lin: column 1, lines 43-47); a quantization unit which quantizes the image data subjected to DCT by the DCT unit according to the quantization parameter determined by the bit rate controller (Lin: figure 1, element 11); a dequantization unit which dequantize the image data quantized by the quantization means (Lin: figure 1, element 12); an Inverse Discrete Cosine Transform (IDCT) unit which performs IDCT on the image data dequantized by the dequantization unit (Lin: figure 1, element 13); a frame memory which stores

the image data subjected to IDCT by the IDCT unit, in units of frames (Lin: figure 1, element 14); and a movement estimation (Lin: figure 1, element 16) and compensation unit (Lin: figure 1, element 17) which estimates a movement vector and a Sum of Absolute Difference (SAD) using image data of an input current flame and image data of an immediately preceding flame stored in the flame memory (Lin: column 2, lines 30-40), and compensates for movement using the movement vector (Lin: column 1, lines 20-30), as in claim 7. However, Lin fails to disclose having the bit rate controller comprising: a complexity calculator which calculates the complexity for each picture on the basis of the bit amount of each flame in the picture and the quantization parameters; a remaining bit amount calculator which calculates a remaining bit amount for each picture in proportion to the complexity calculated by the complexity calculator; and a quantization parameter determination unit which determines the quantization parameter on the basis of the complexity for each picture and the remaining bit amount for each picture calculated by the complexity calculator and the remaining bit amount calculator. Ribas-Corbera discloses an apparatus (figure 5), comprises: a complexity calculator which calculates a complexity for each of a plurality of pictures (Ribas-Corbera: column 4, lines 40-55) on the basis of a bit amount and a quantization parameter of a previous frame (Ribas-Corbera: column 4, lines 57-67); a remaining bit amount calculator for calculating a remaining bit amount for each picture (Ribas-Corbera: column 8, lines 5-35) in proportion to the complexity for each picture calculated in (a) (Ribas-Corbera: column 5, lines 20-40); and a quantization parameter determination unit which determines the quantization parameter on the basis of the complexity for each picture and the remaining bit amount for each picture calculated by the complexity calculator and the remaining bit amount calculator (Ribas-Corbera: column 6, lines 20-67) in

order to account for sudden changes in the GOP sequence while preventing overflow and underflow (Ribas-Corbera: column 1, lines 45-57). Accordingly, given this teaching it would have been obvious for one of ordinary skill in the art to incorporate the Ribas-Corbera complexity calculator into the Lin apparatus in order to have the Lin apparatus allow for sudden changes in the GOP while preventing buffer overflow and underflow. The Lin apparatus, now incorporating the Ribas-Corbera complexity calculator, has all of the features of claim 7.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Linzer discloses an approximate MPEG decoder with compressed reference frames.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andy S. Rao whose telephone number is (571)-272-7337. The examiner can normally be reached on Monday-Friday 8 hours.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mehrdad Dastouri can be reached on (571)-272-7418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Andy S. Rao
Primary Examiner
Art Unit 2621

asr
July 31, 2007